

Laurie Baker's

**BRICK
WORK**

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LAURIE BAKER'S BRICKWORK

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LAURIE BAKER

ENGLISH

Laurie Baker's Brickwork

Laurie Baker

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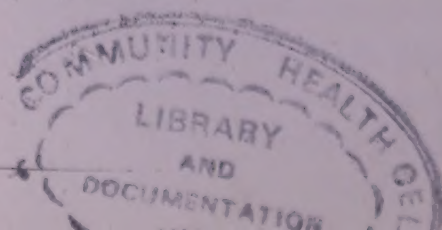
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FOREWORD

The common burnt brick is one of man's great inventions. Five thousand years ago bricks were made in many different shapes and sizes but, one by one, the less satisfactory ones were discarded. Now, all over the world, with only a few exceptions, nearly all bricks are roughly the same shape and size – that is about $9 \times 4\frac{1}{2} \times 3$ inches. This is neither accidental nor coincidence but the result of five thousand years of what we now call R and D – research and development.

This common brick contains just that amount of mud which you can pick up and hold in your two hands without dropping any of it. If you pick up less mud, your brick will be too small. A wall will be too thin and you will have to use more mortar. (Perhaps this is why the "Metric Brick" – $20 \times 10 \times 5$ cm has not been acceptable?). If you make a larger brick and use more than one scoop of mud, you will have to bend down twice to pick up enough mud. When this big brick is burned it is likely to warp, bend and crack. It will be too heavy and too big to pick up with one hand. You will have to put down your tools and use both hands to manhandle the brick. But our standard brick avoids all these problems. It is just the right size to hold in the palm of one hand. It can be thrown by one man and caught in one hand by another man. You can keep your trowel in one hand while you place the brick with the other. It has been burned right through and it has not twisted or cracked with the heat.

This common burnt brick is usually pleasing to look at with warm colours ranging from cream, through orangy sandy colours to brown and even bluey brown. When built into a wall, pleasing and interesting simple patterns appear. Like people who all have one nose, one mouth, two ears and two eyes but no two look exactly the same, so each brick, although so simple in shape, has its own individuality. Of course, there are always some people who prefer absolute uniformity so, at double the cost, they have invented the wire cut machine made brick so that every brick looks as dull as its neighbour (God help us if this had happened with His creations!). Fortunately most of us cannot afford these soul-less wire cut bricks!

This small book is about the best ways of using this common burnt brick, the simplest and least complicated of all our inventions. We are at liberty to use materials in whatever way we wish, but this book is for those who want to build with brick effectively, acceptably, strongly and with as little expenditure as possible. Experience shows that there are good, (and in this present context, cost effective) ways of using bricks and there are also bad ways of using them so that the special benefits of this simple and ingenious item are lost or wasted.

Working and building with bricks is not only an interesting occupation but it is also very satisfying. Even a plain simple wall is full of pattern and colour. Within minutes you can see the fruits of your labours and you can stand back and admire what you have done with your own hands. There are a number of well known famous world personages (Sir Winston Churchill was one of them!), who built brick walls as a hobby and as an occupation for relaxation and pleasure when other worldly pressures were too great.

Unfortunately the final word about this common burnt brick, is to point out to you that it is made of mud, which is more or less cost-less – but to make it "strong and durable" and "colourful" we burn or bake it in the fire. This "firing" process is not only costly, but in many parts of the country wood is used for this burning of the bricks. Not only is timber getting more and more costly (so brick manufacturers are tempted to use less wood and so produce an inferior brick) but we are plundering our forests and bringing upon ourselves many ills and calamities. This means that we should not use brick as freely as we have been used to and we must turn to other materials for our walls. Alas! we have all too often turned to concrete and cement blocks, which use even more energy (fuel) in their manufacturing process. We should in fact be seeking out and using energy free materials such as stone and mud. Mud is dealt with separately in another COSTFORD book, but most of the contents of this book apply not only to the use of burnt bricks, but of mud bricks or sun dried mud bricks.

Over a period of fifty years, and more, I have had a lot of enjoyment with bricks. This book is only about a few simple Do's and Dont's. Like most good things in life you have to get down to it and do it yourself to get real enjoyment and satisfaction.

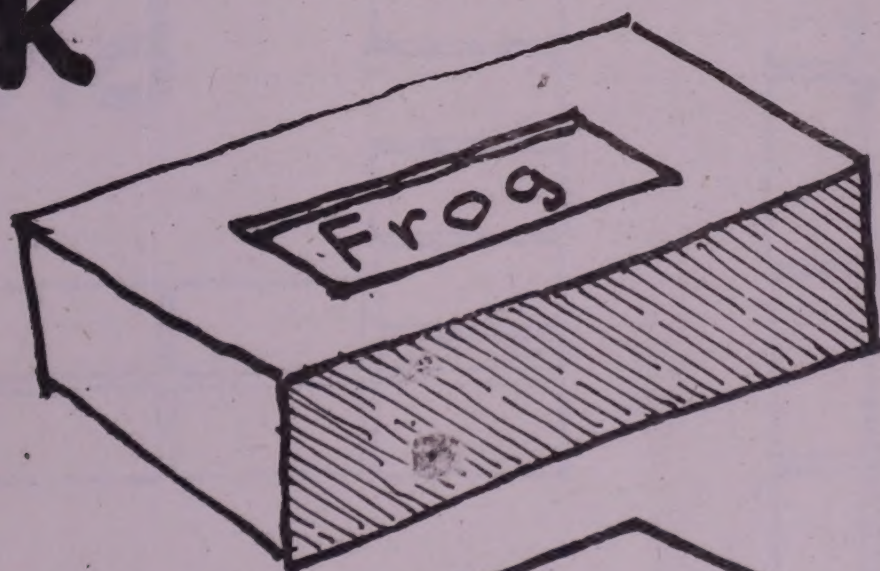
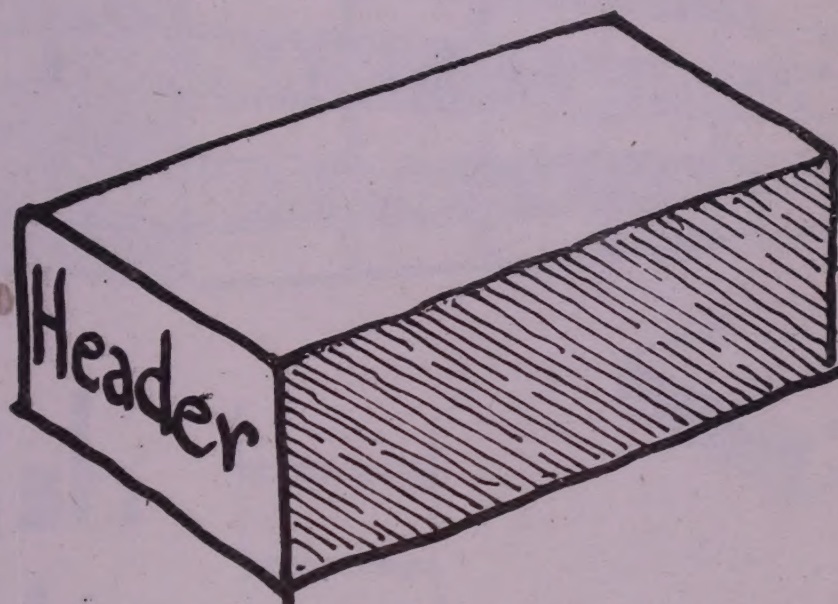
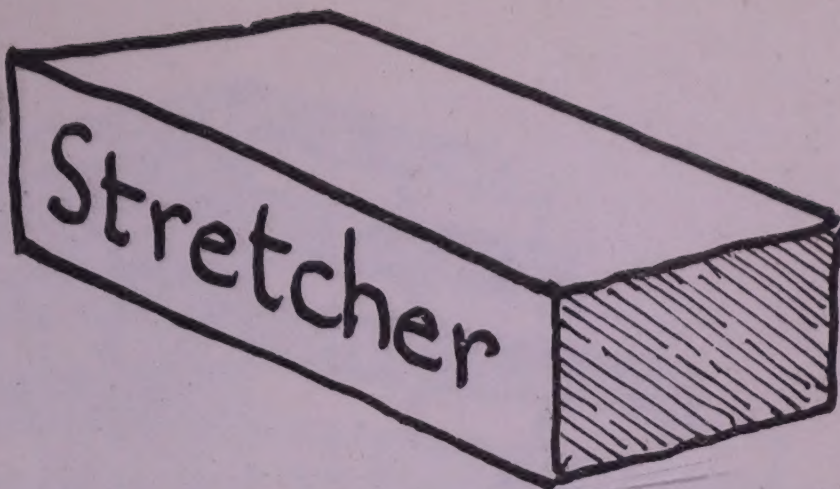
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OF

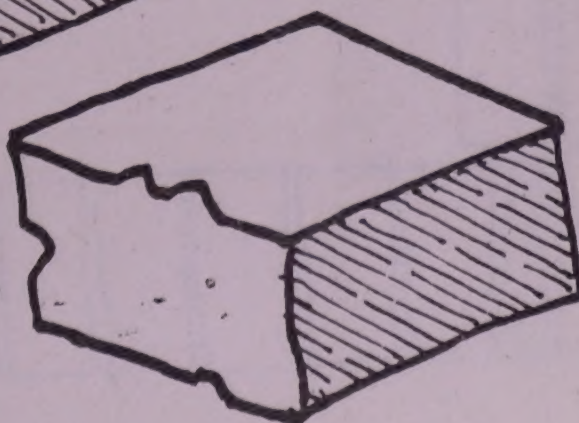
PARTS

OF A

BRICK



A brick
bat.



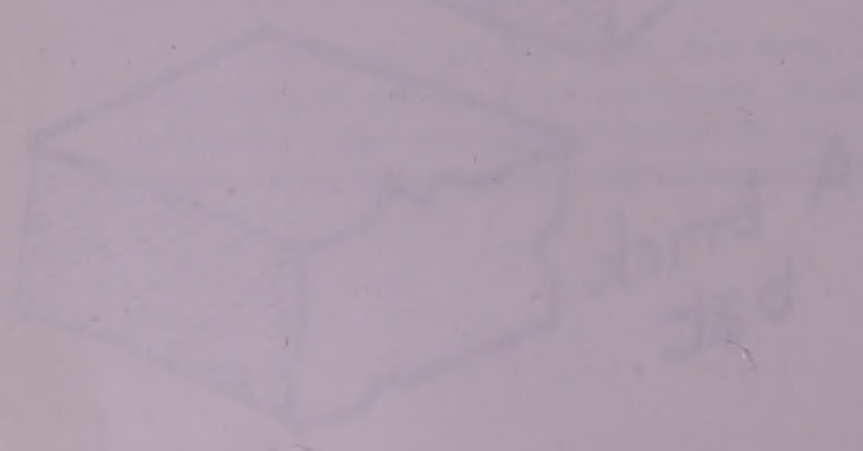
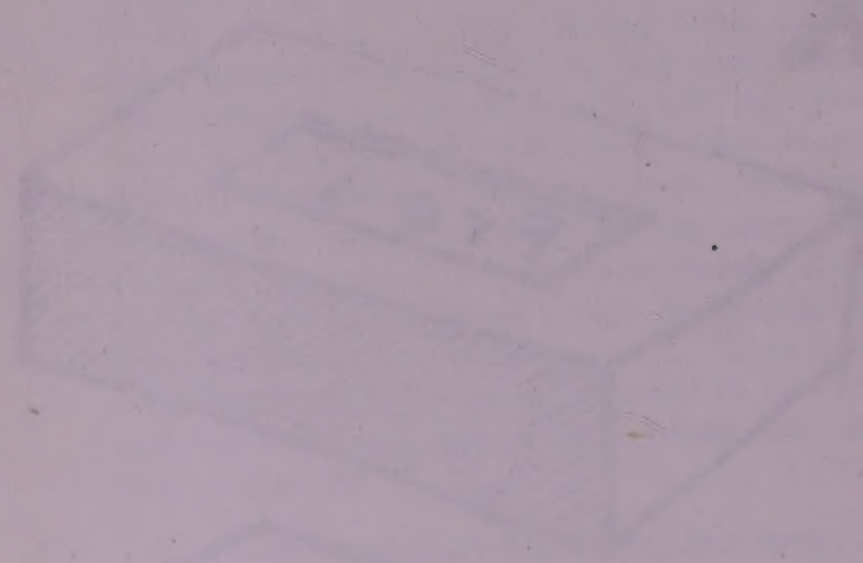
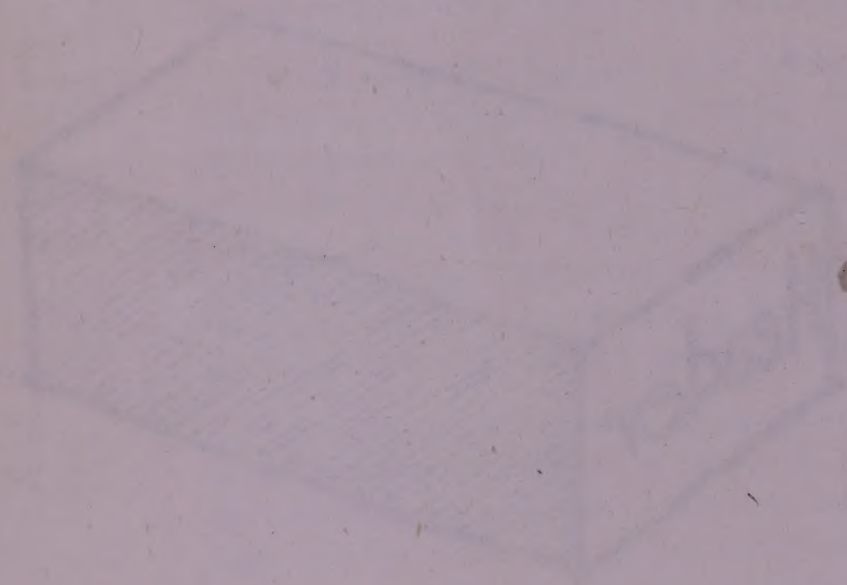
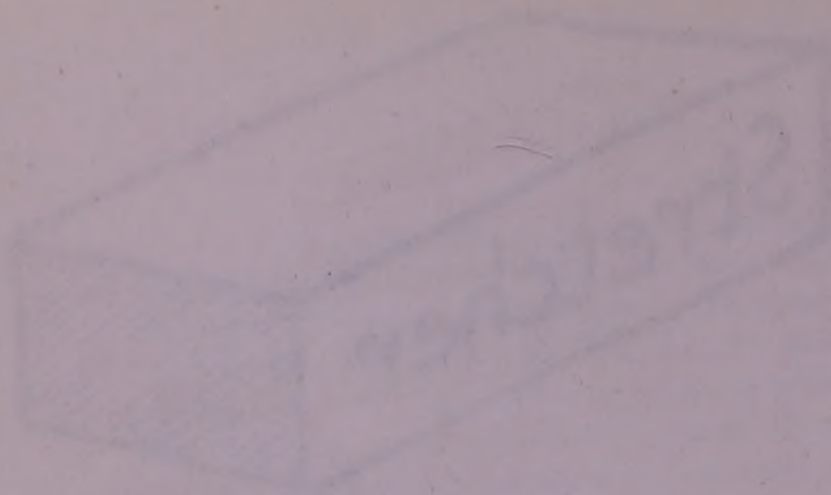
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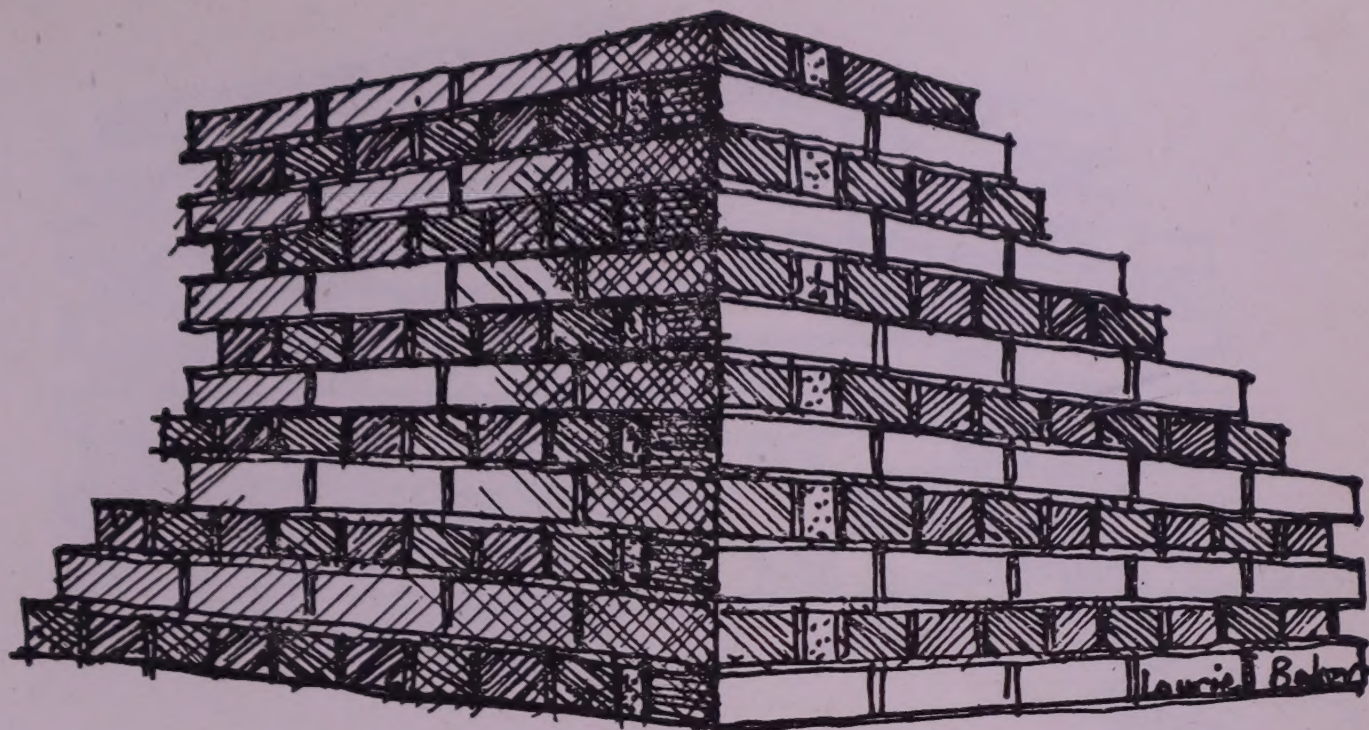
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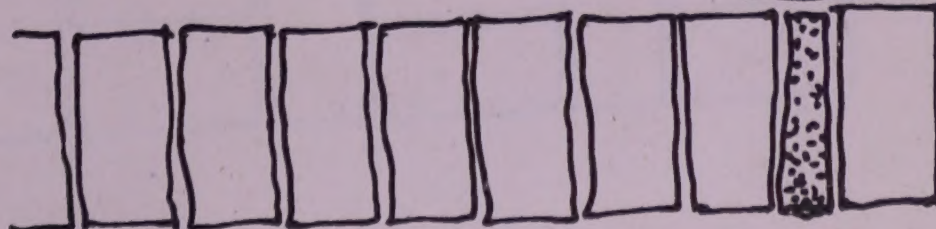
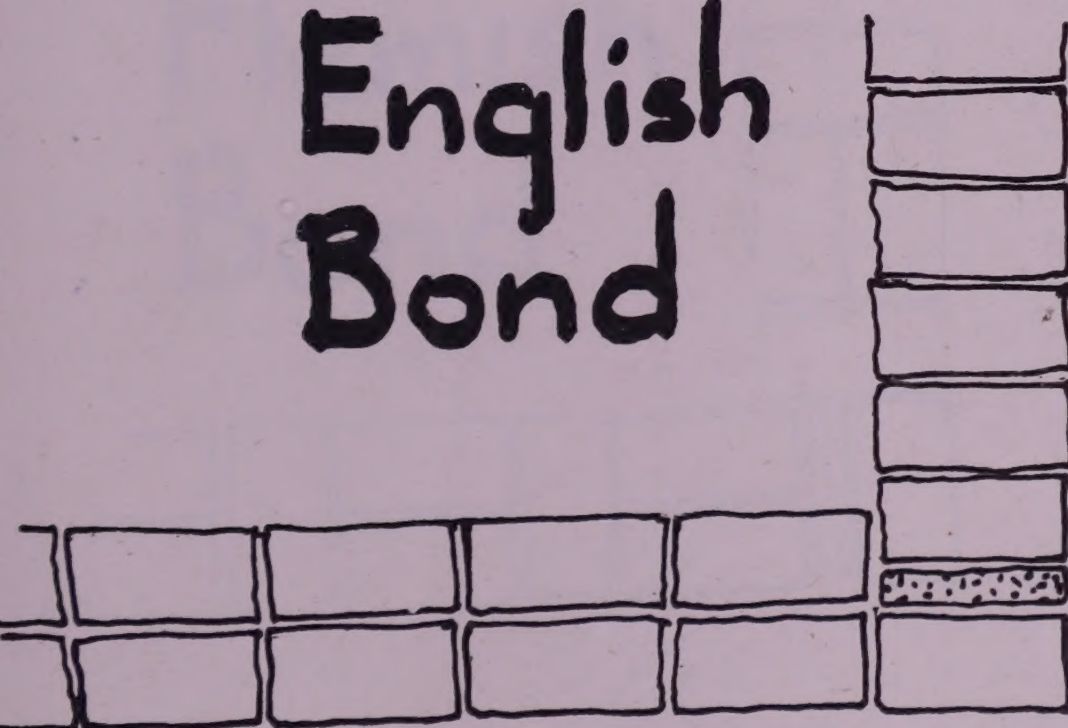
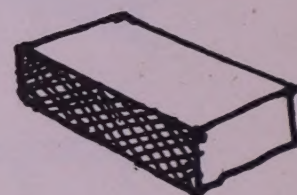
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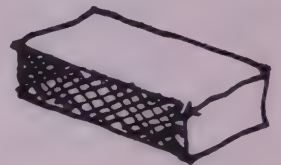
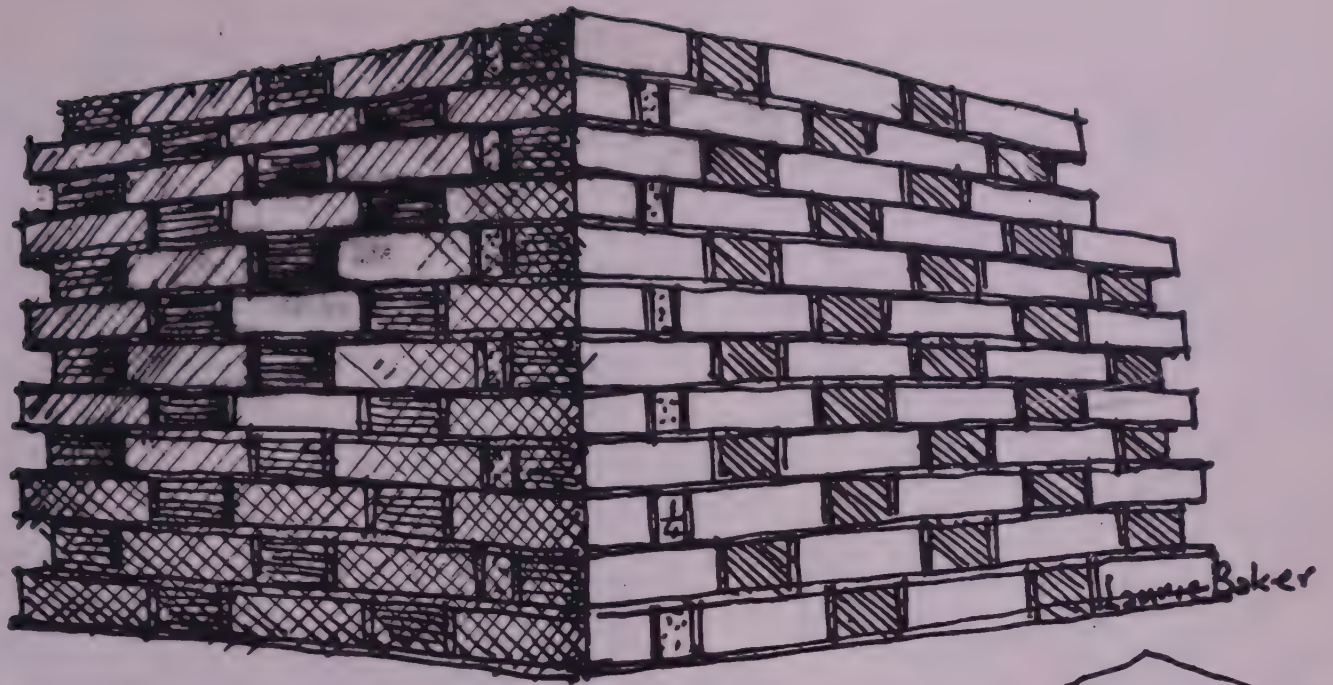
BRICK



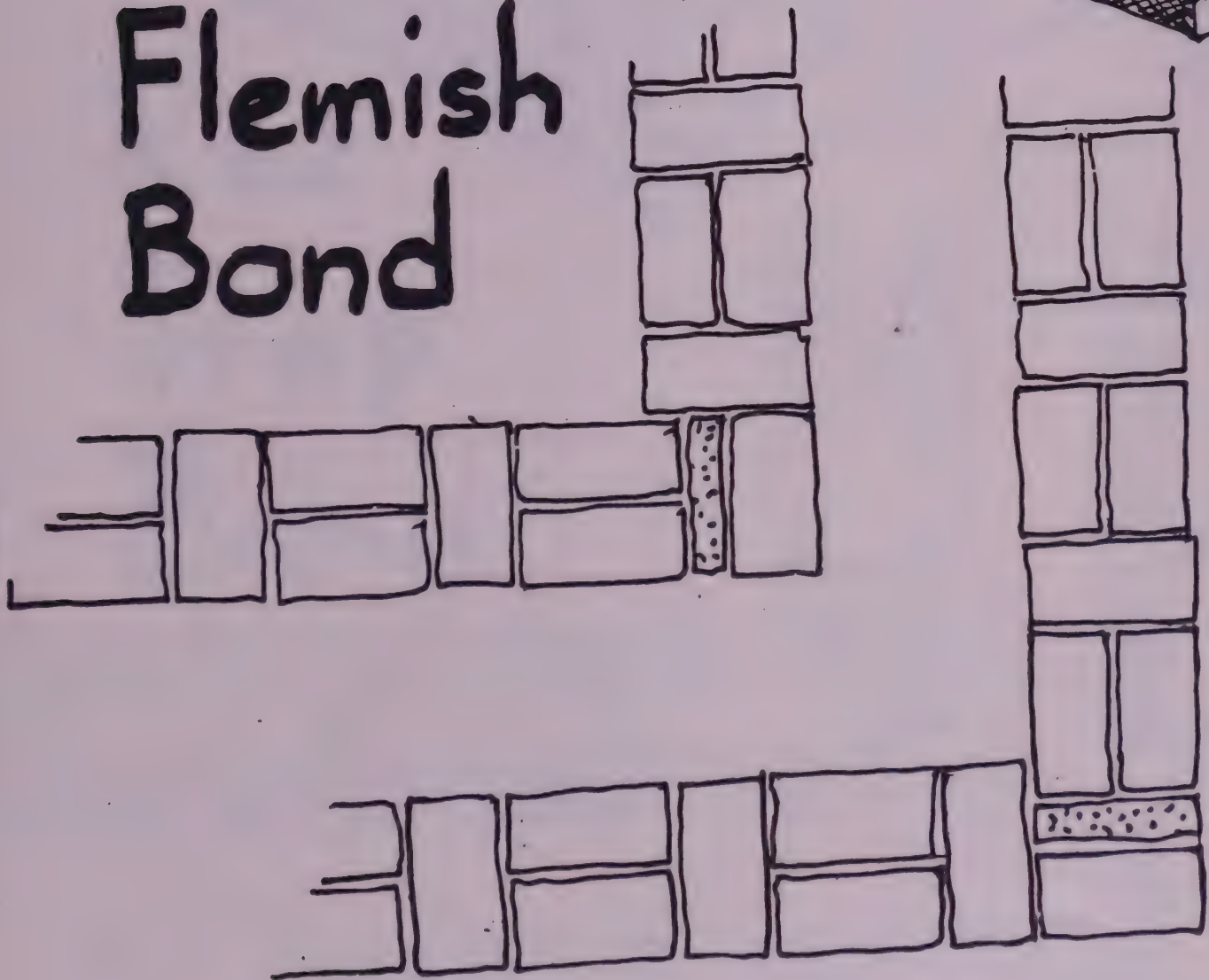


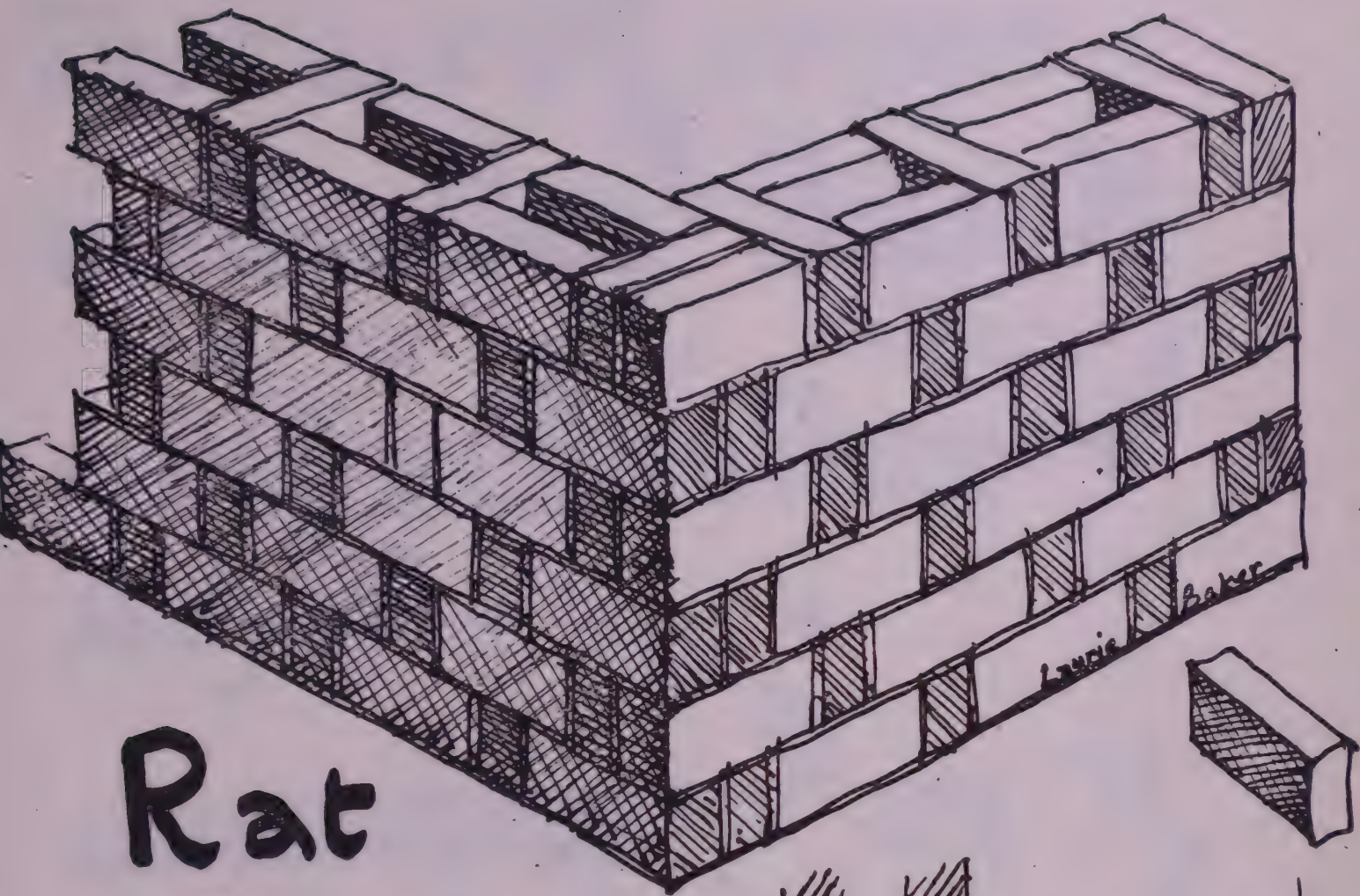
English Bond



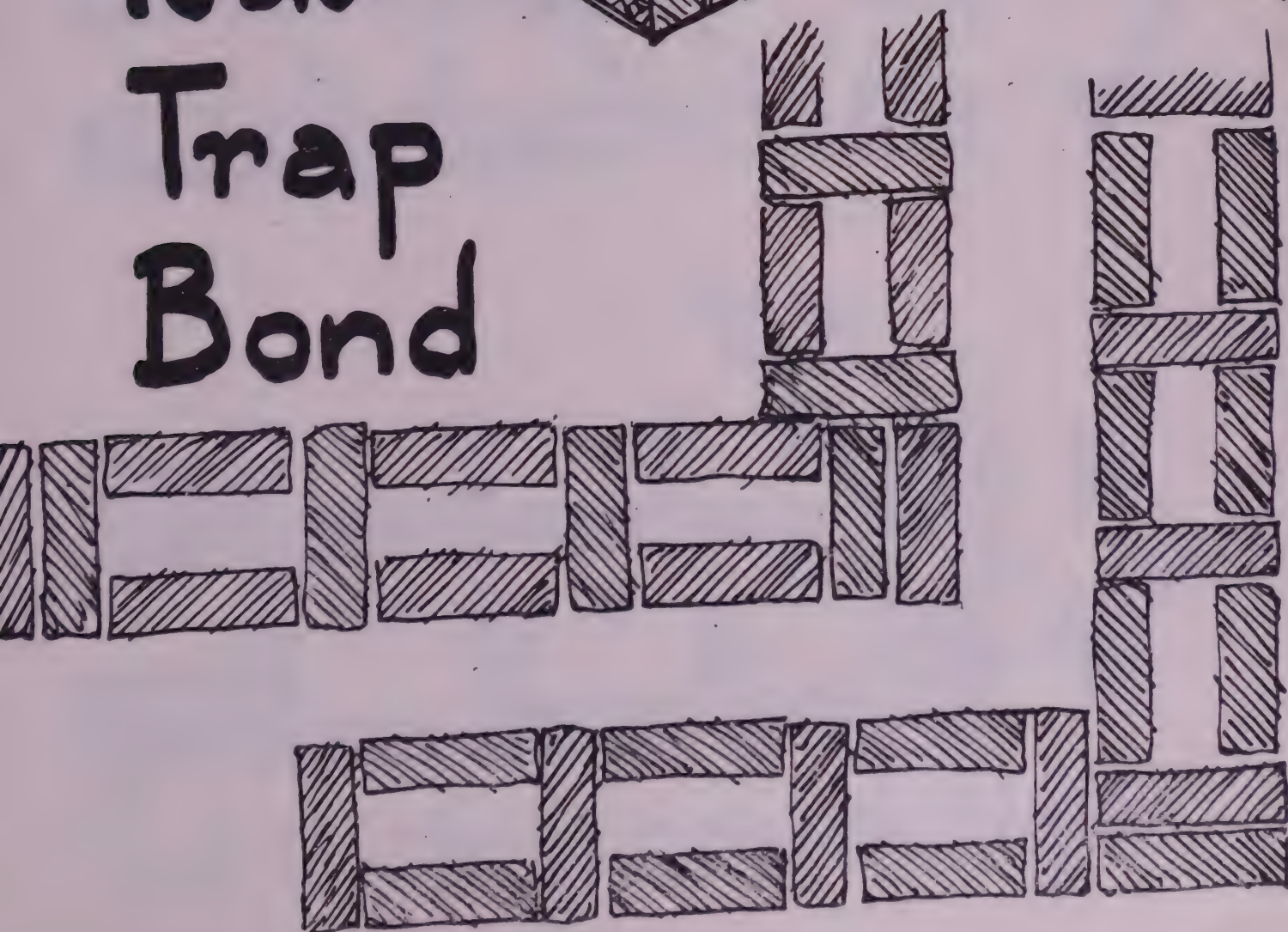


Flemish Bond

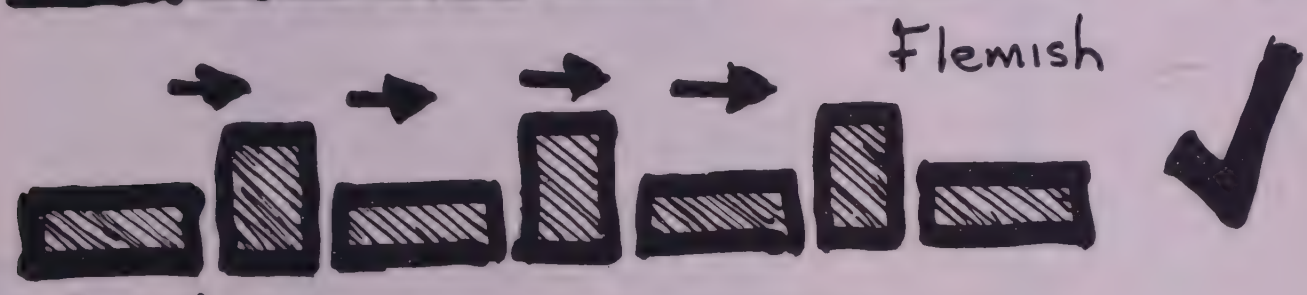




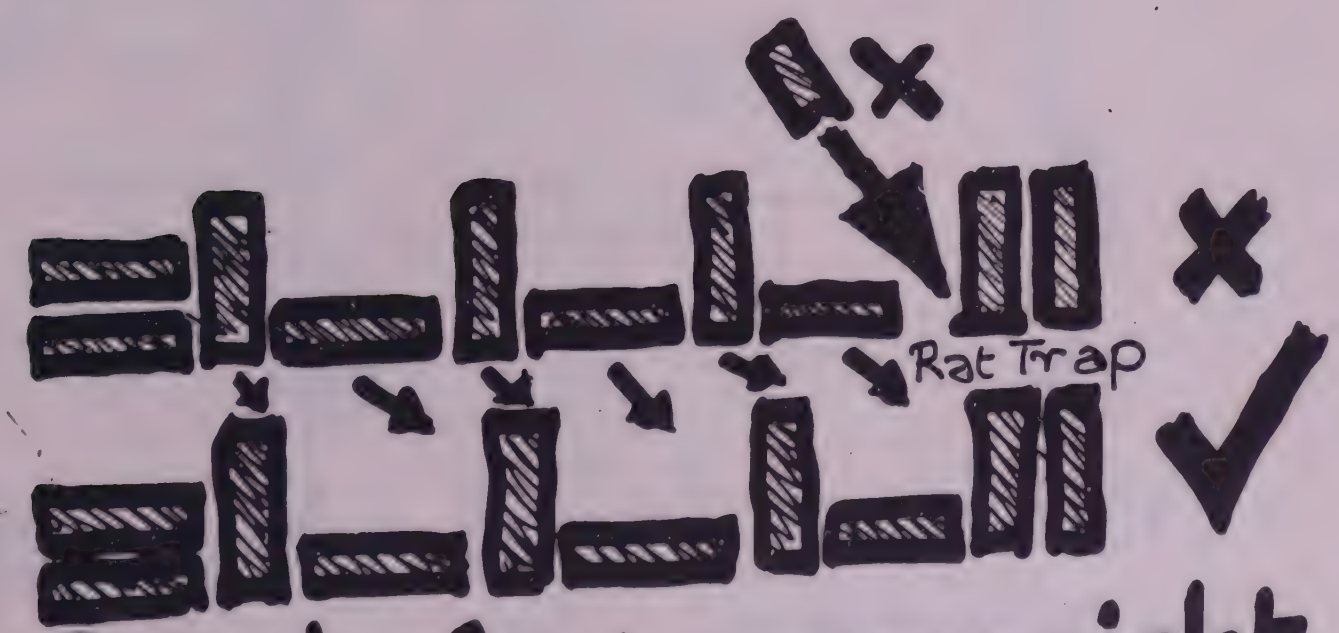
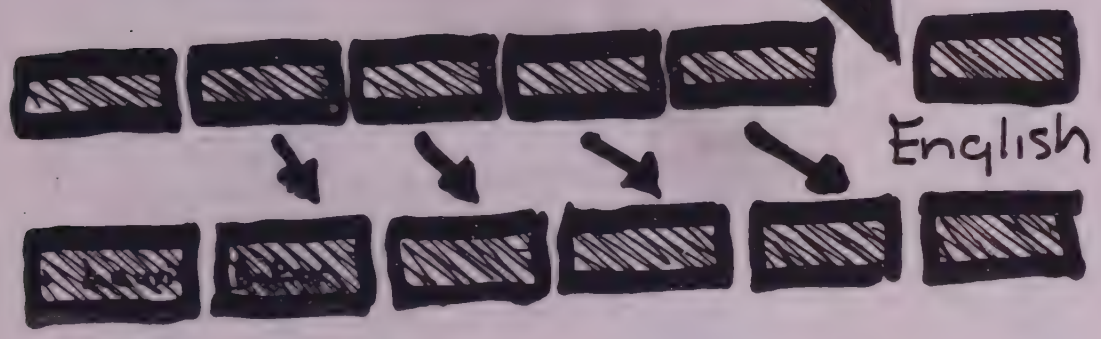
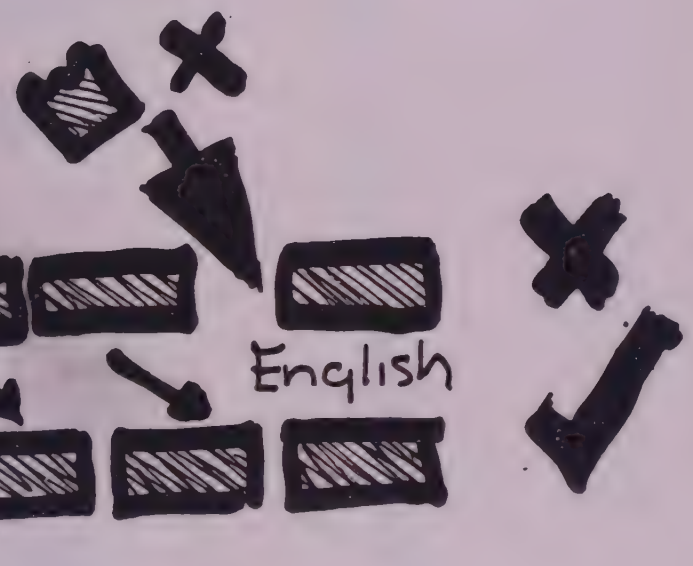
Rat Trap Bond



Don't cut  & insert

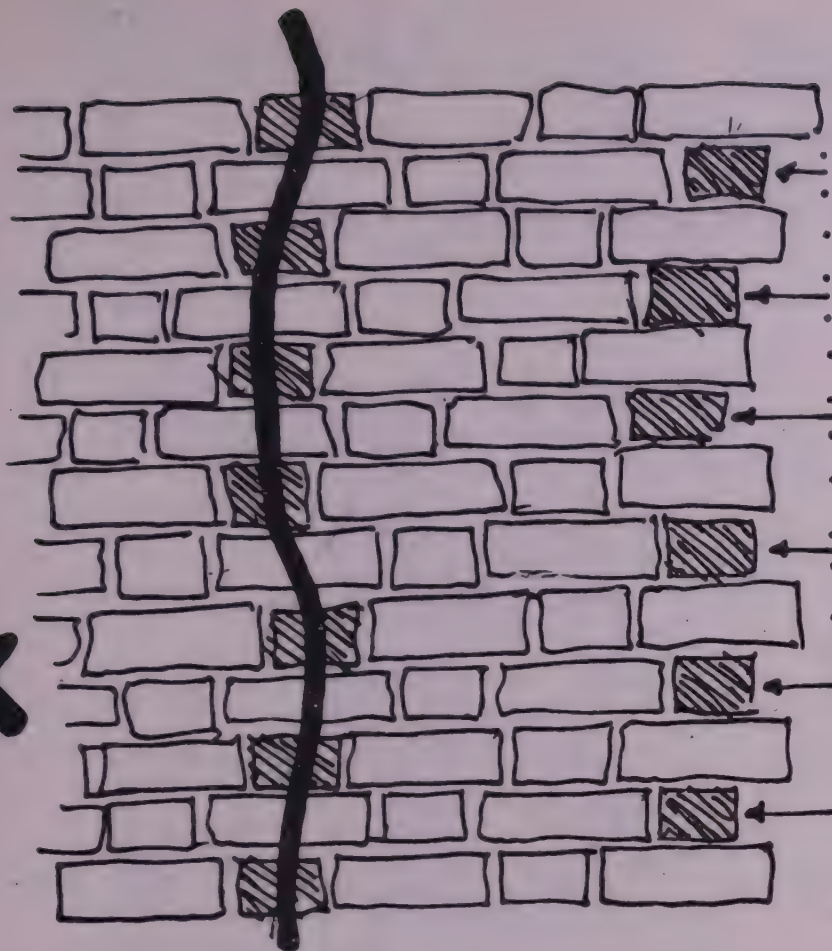


Adjust →

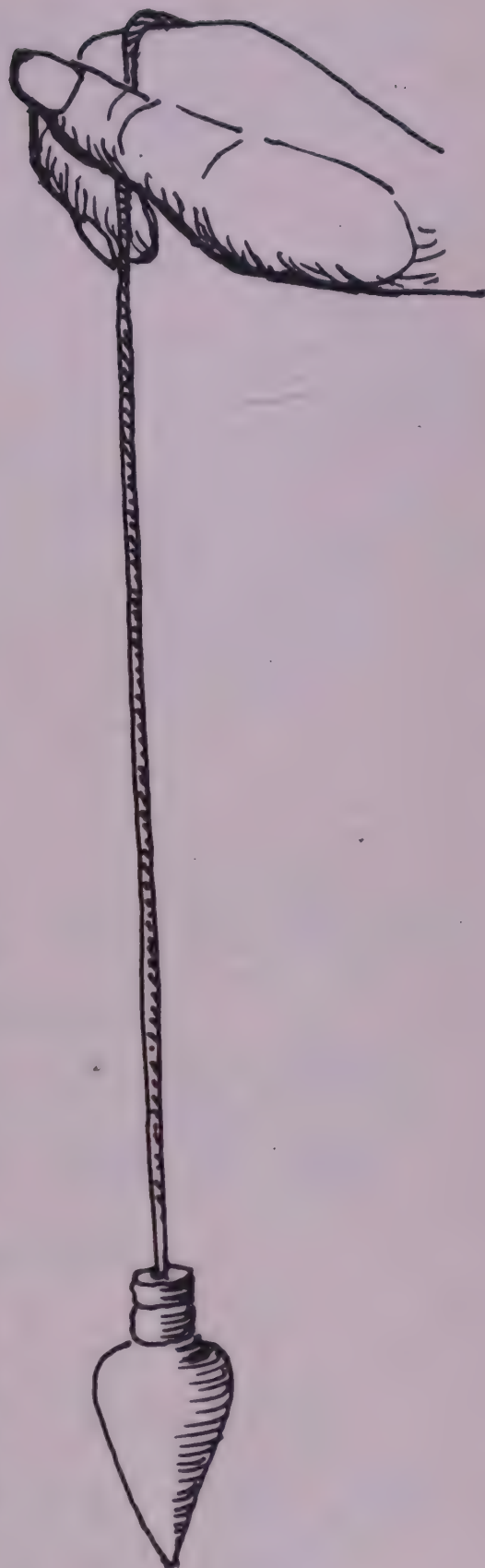
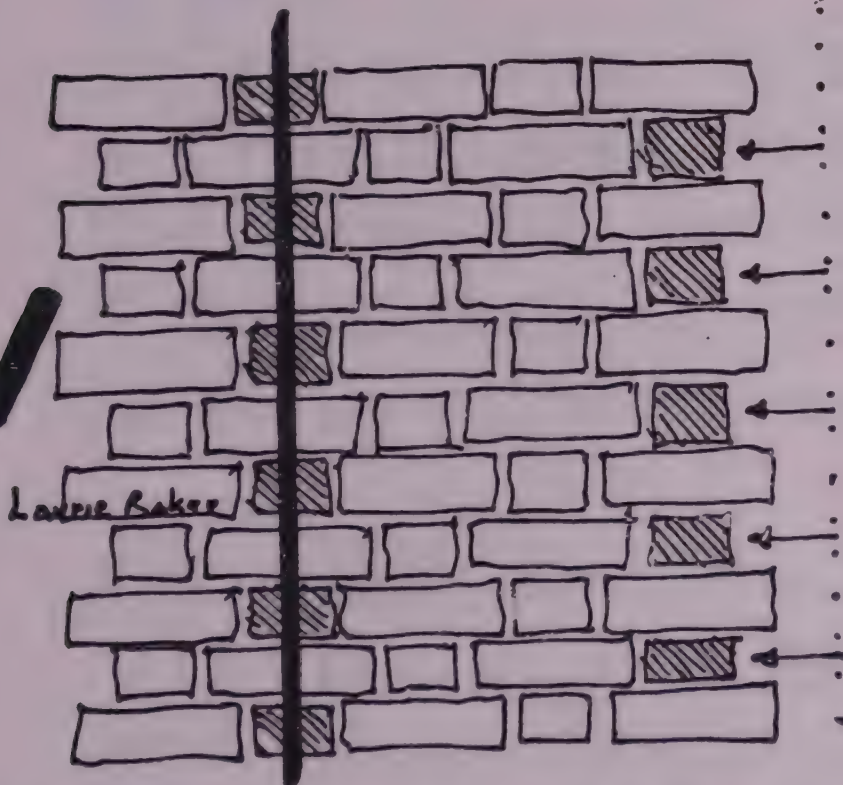


Get the first course right

X



✓

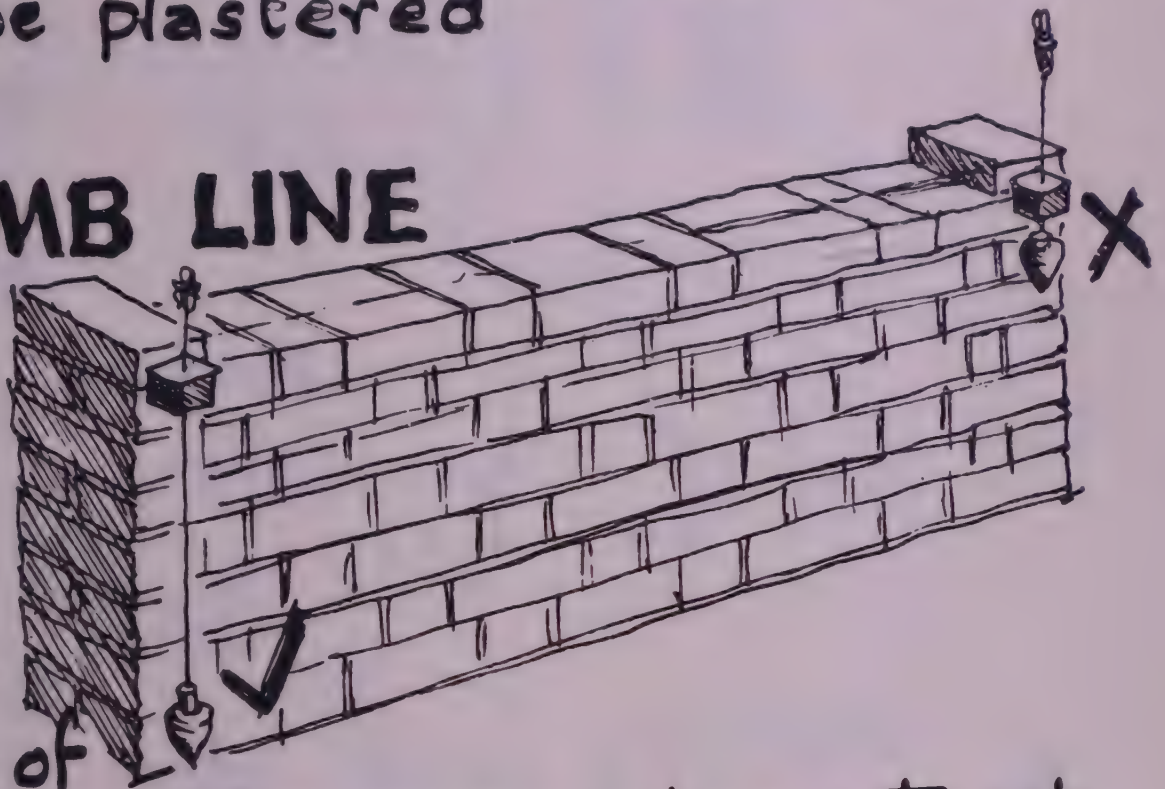


Keep the brick pattern
STRAIGHT and **VERTICAL**

DAMAGED BRICKS can be used in internal walls that will be plastered

The **PLUMB LINE**

need only be used at the ends of



walls and then use a string to get a straight wall between.

The plumb line should always fall to the bottom course, not to the brick immediately below.

FOR ORDINARY SMALL HOUSES

$4\frac{1}{2}$ " brick walls can be used for short stretches of wall.

9" brick walls are adequate for almost all walls.

$13\frac{1}{2}$ " brick walls are very rarely necessary.

DAMAGED REPAIRS

to be repaired
and to be repaired

PLUMBING LINE

and
only
be
used
with
this
type

and then use a 2" pipe
a 2" pipe will be
the 2" pipe will be
a 2" pipe will be
a 2" pipe will be
a 2" pipe will be

for 2" pipe will be

2" pipe will be

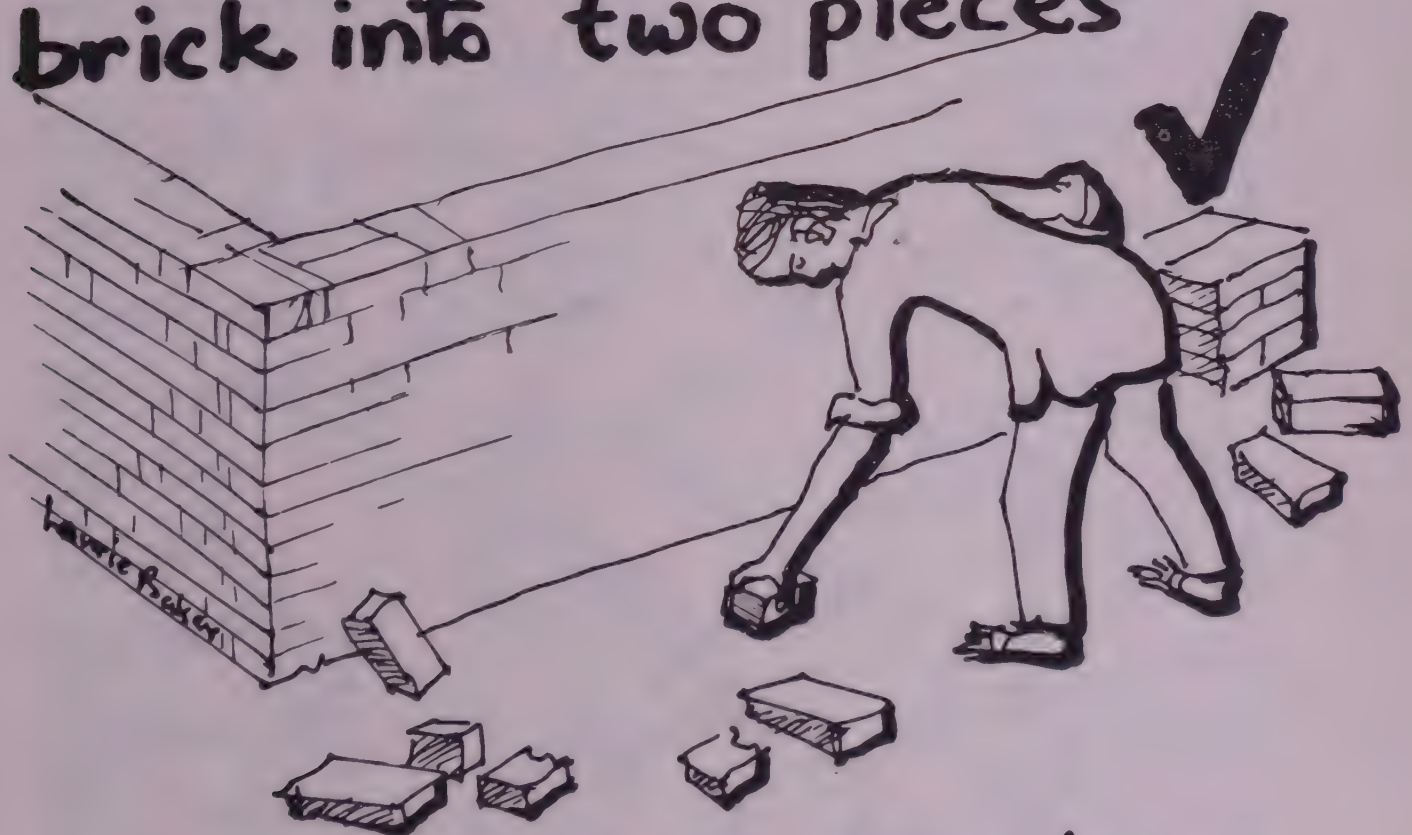
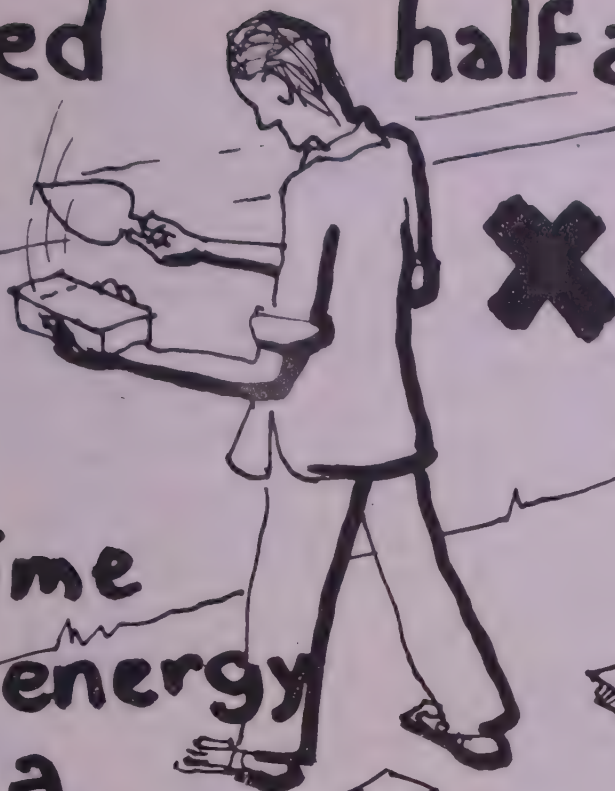
2" pipe will be

2" pipe will be

4
9
13

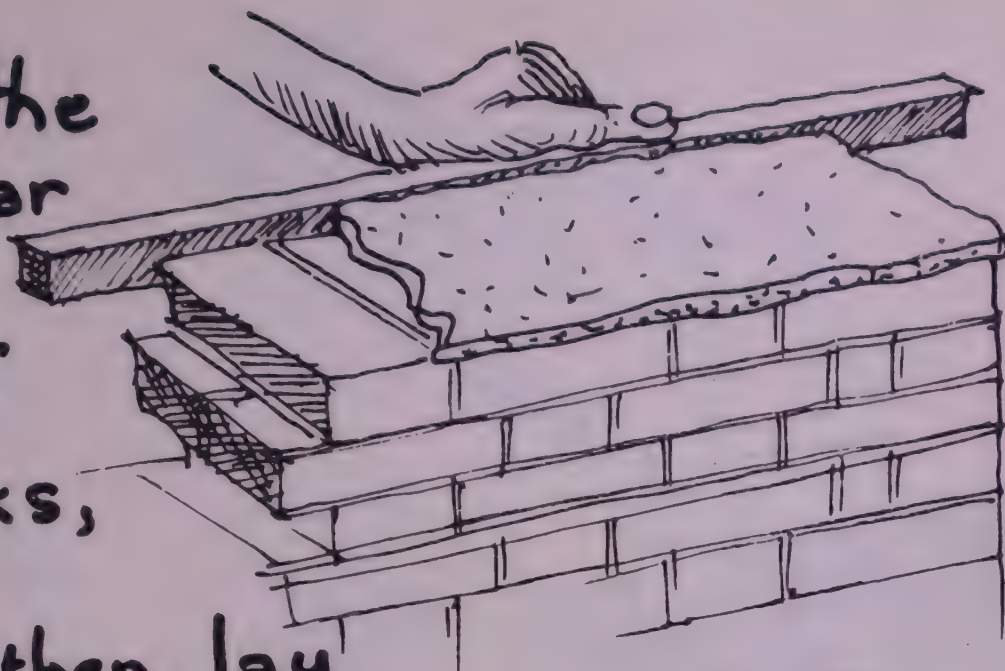
If you need half a brick

DONT
waste
bricks, time
money & energy
cutting a
whole
brick into two pieces

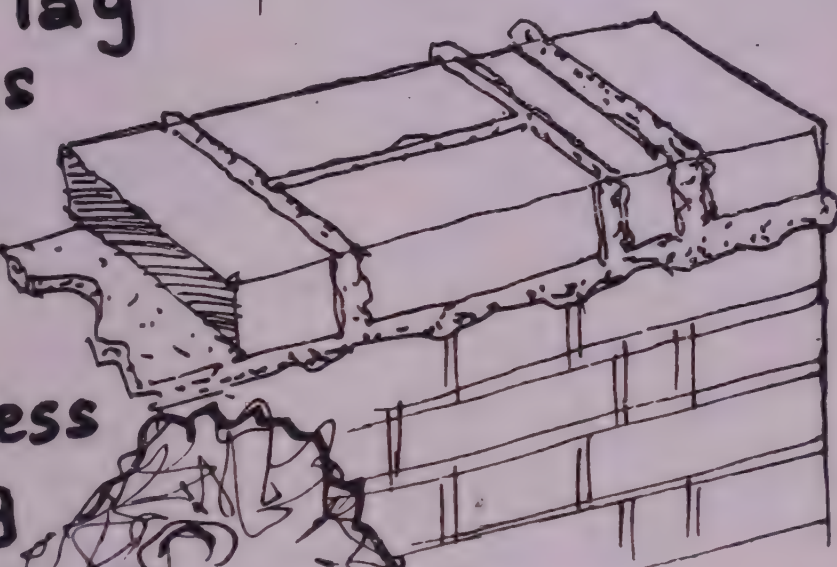


bend down and pick up
a waste half brick bat.

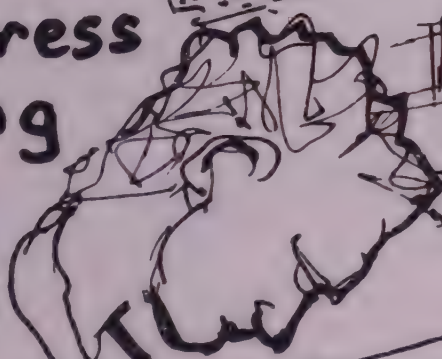
Lay the
mortar
to
cover
the
bricks,



and then lay
the bricks
carefully
in position



Finally press
the bulging
mortar
in firmly
to be
level
with the
face of
the wall



**NO FURTHER
POINTING
IS NECESSARY**



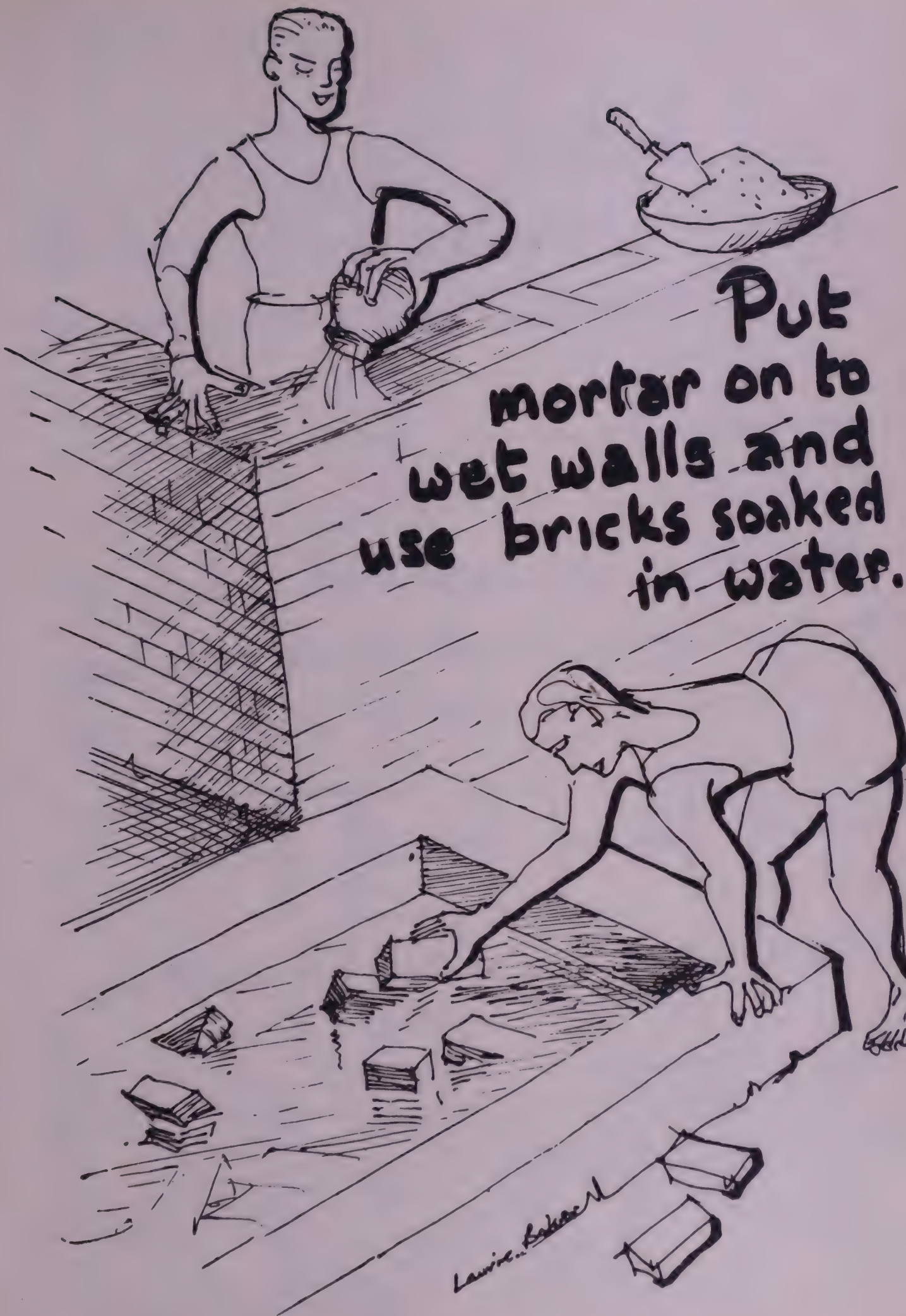
Laurie Baker

Rat
Trap
Bond
Mortar
laying



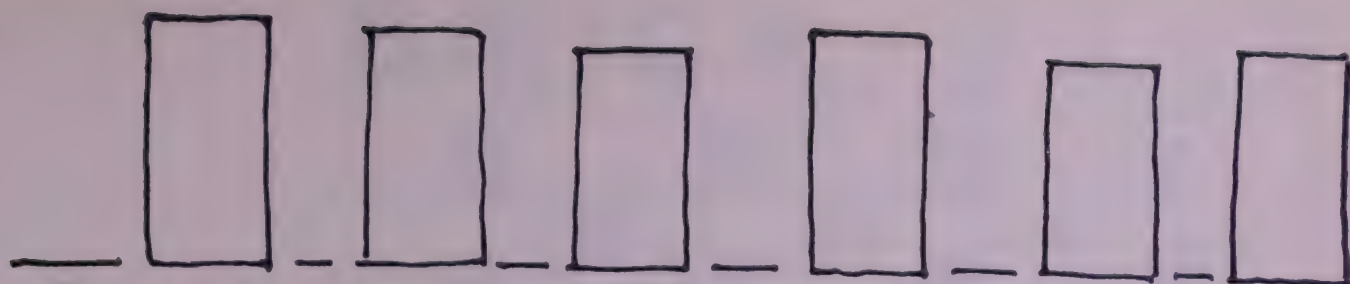
3'-0" long
3" x $\frac{3}{4}$ " in section

If mortar is placed carelessly on the bricks some of it will fall into the cavities & be wasted. This can be avoided by holding a piece of wood about 3 ft x 3" x $\frac{3}{4}$ " over the middle of the wall to cover the cavities while applying the mortar.

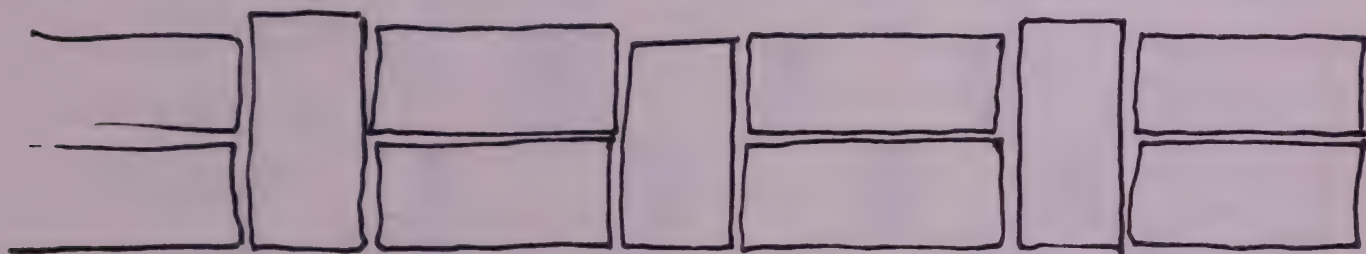


**Put
mortar on to
wet walls and
use bricks soaked
in water.**

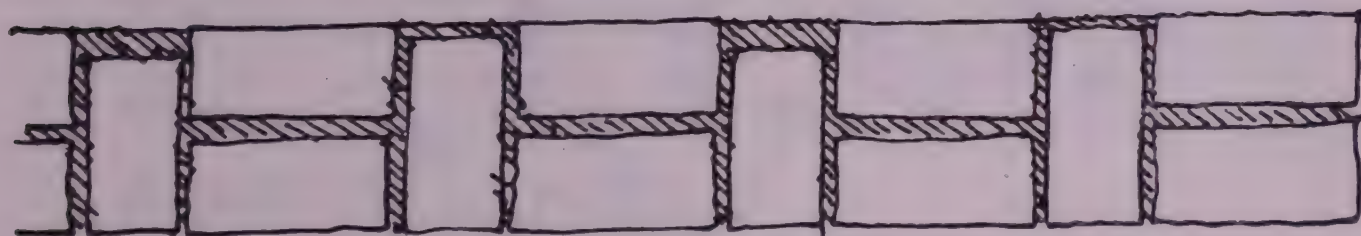
Laurie Schacht



Bricks all vary slightly in length
so only one side of the wall can be level.



To get a "fair face" on both sides
you must bring the second row of
"stretchers" forward and "in line",



and then fill in the hollows with mortar
This gives a pleasing
pattern.

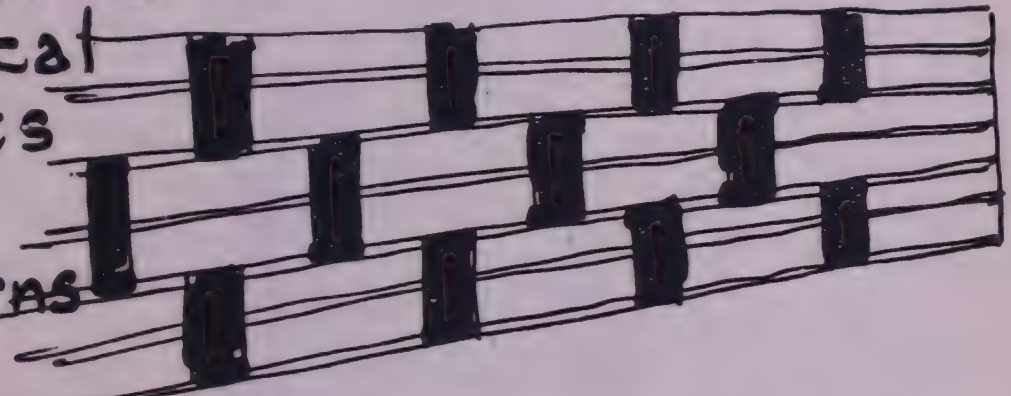


Laurie Bokas

BRICK JALI



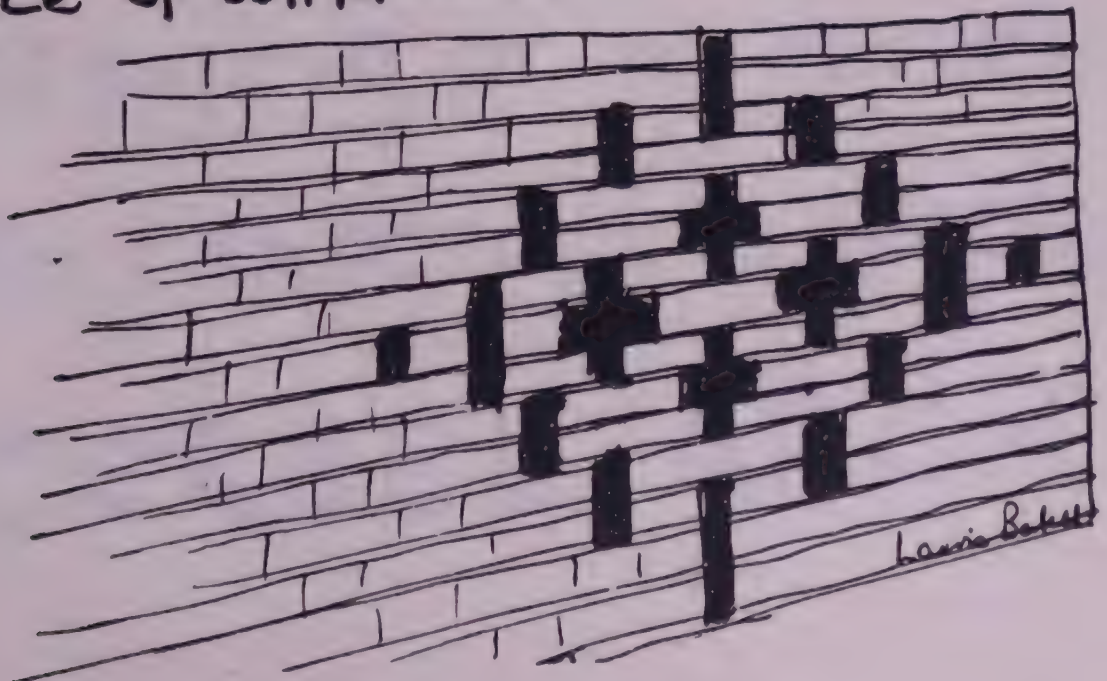
Widen and leave open the vertical joints and patterns and ventilation



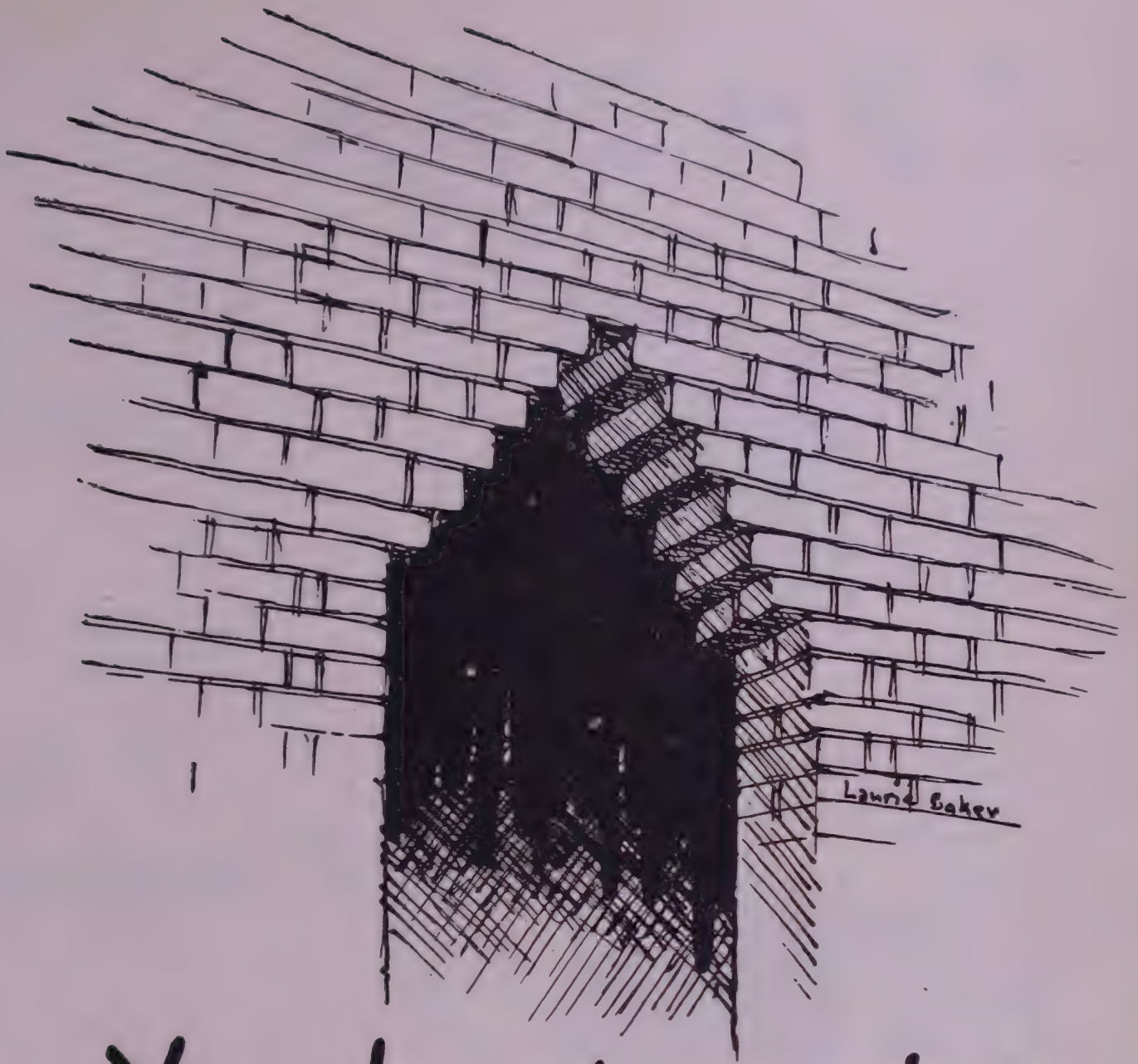
holes

can take the

place of windows.



Louis Behr



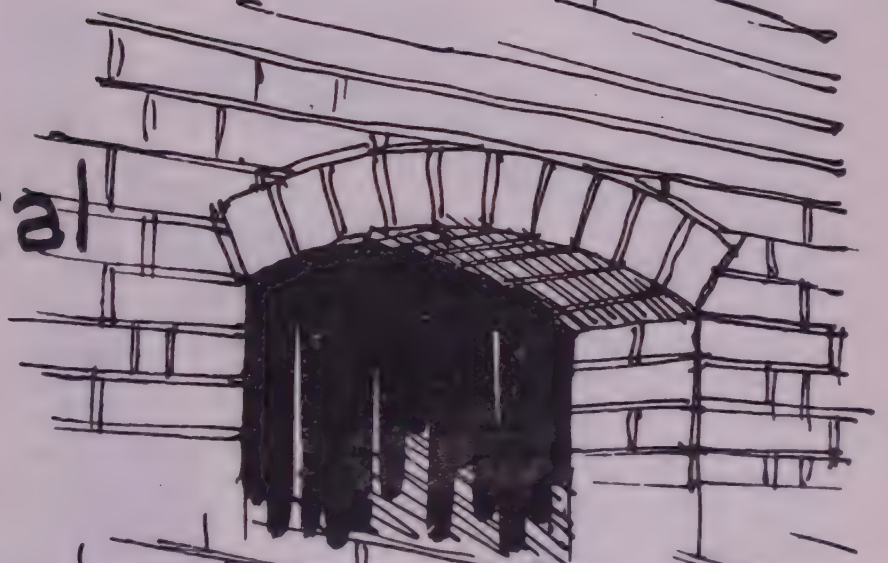
You do not require
staging or formwork
to construct a simple
CORBEL ARCH

ARCHES

can be
flat



or
segmental

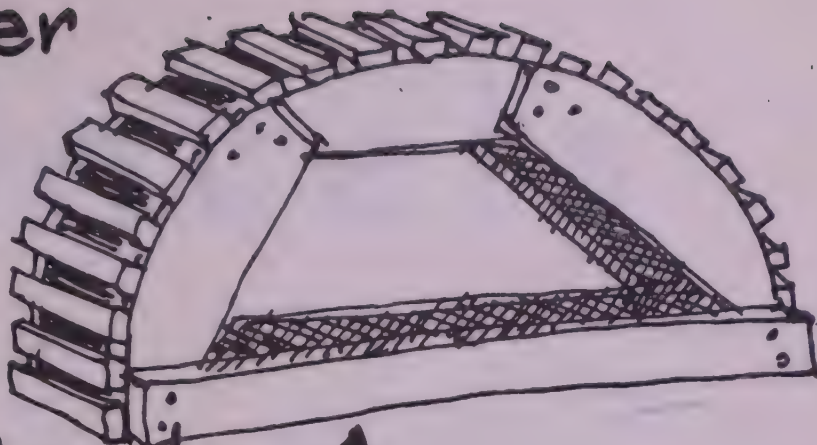


or semi-
circular

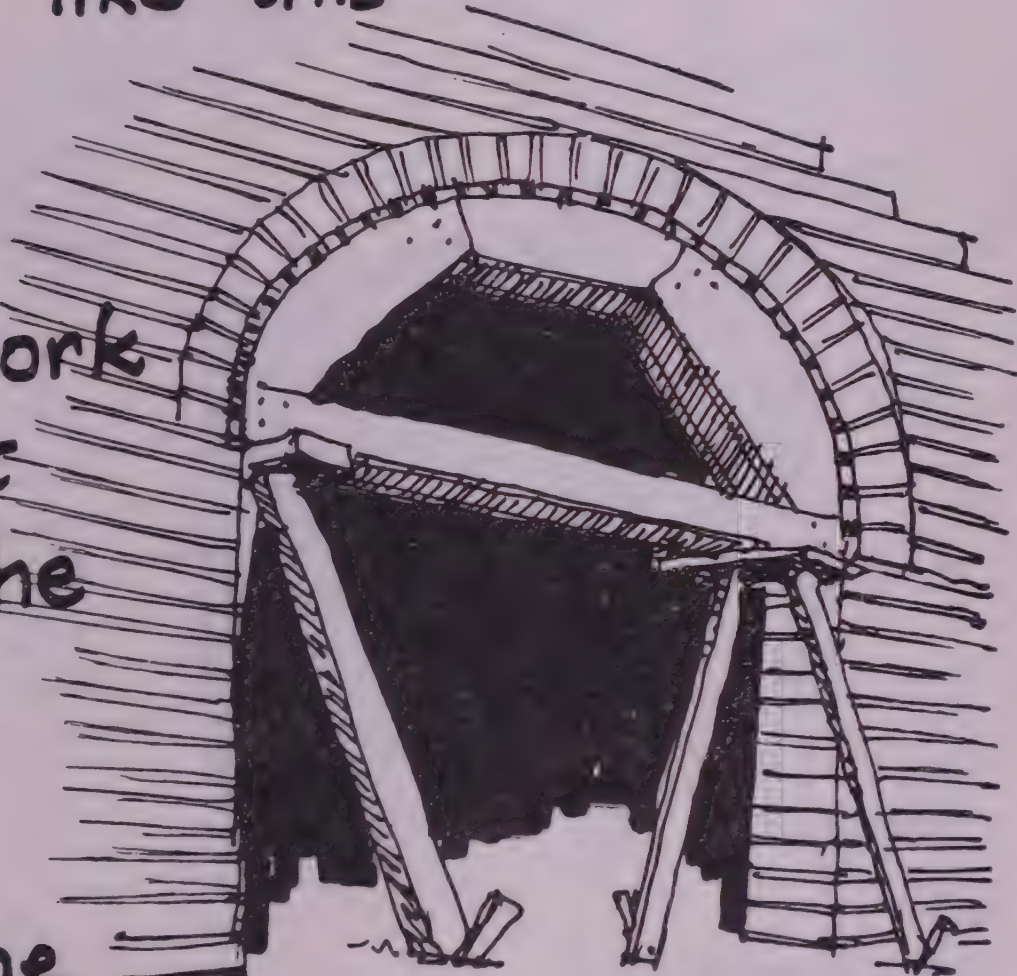


or even
pointed.

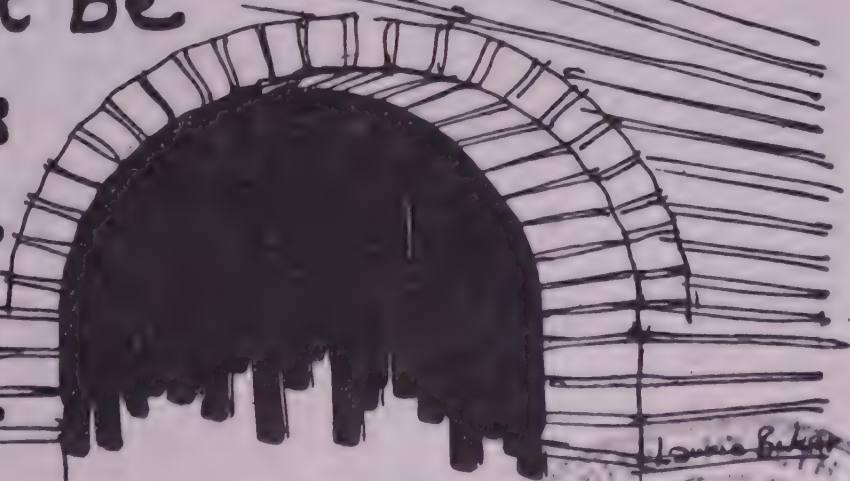
It is easier
to build
an arch
over a
frame like this →



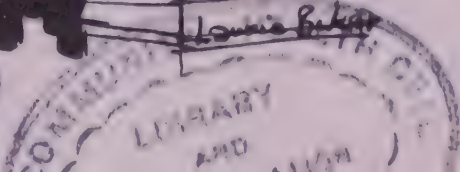
The
brickwork
is built
over the
frame



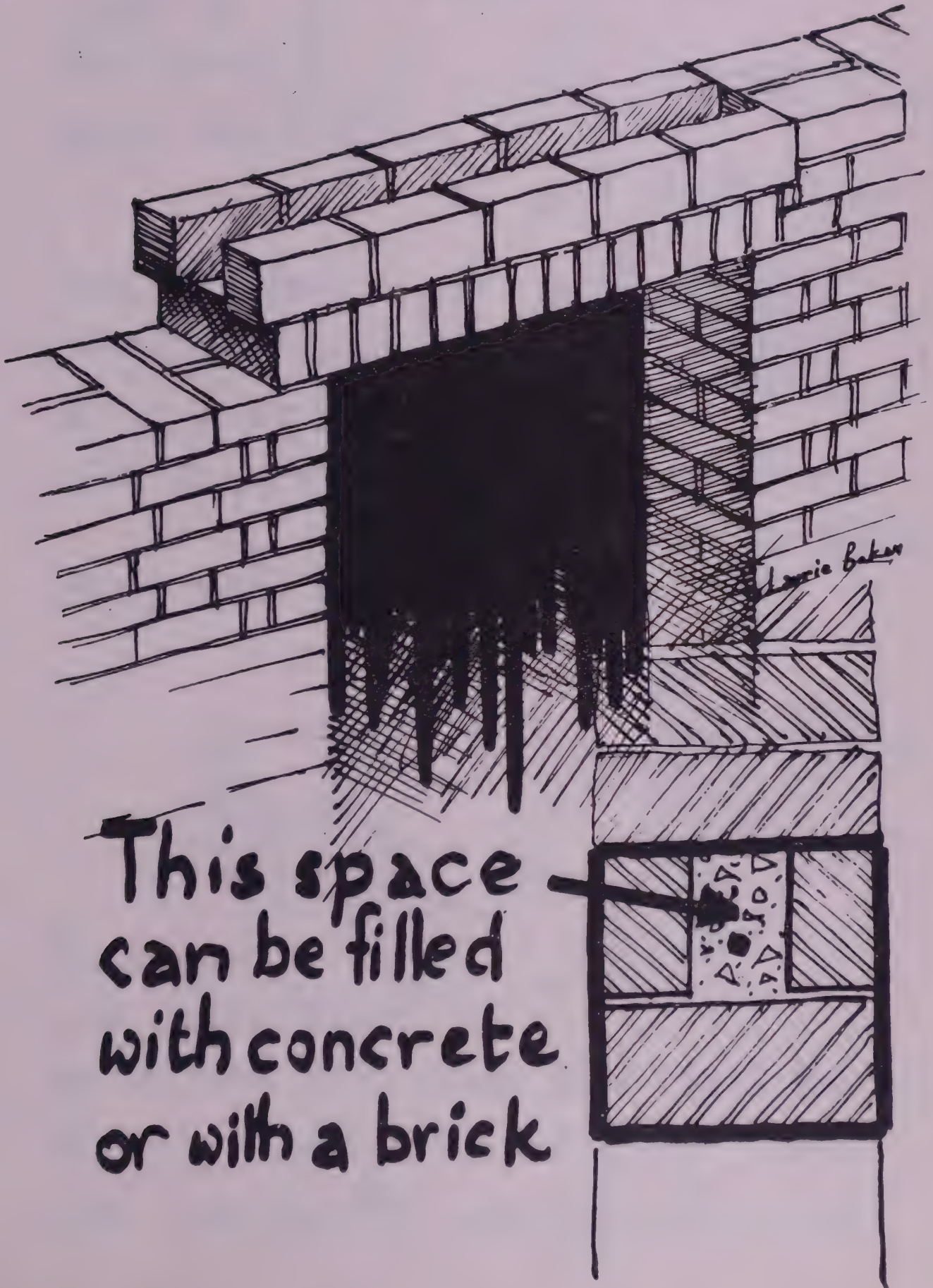
but the
frame must be
removed as
soon as the
arch is
completed.



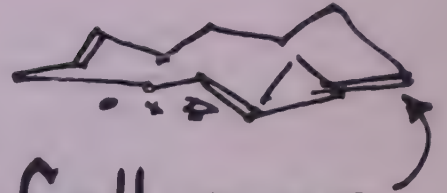
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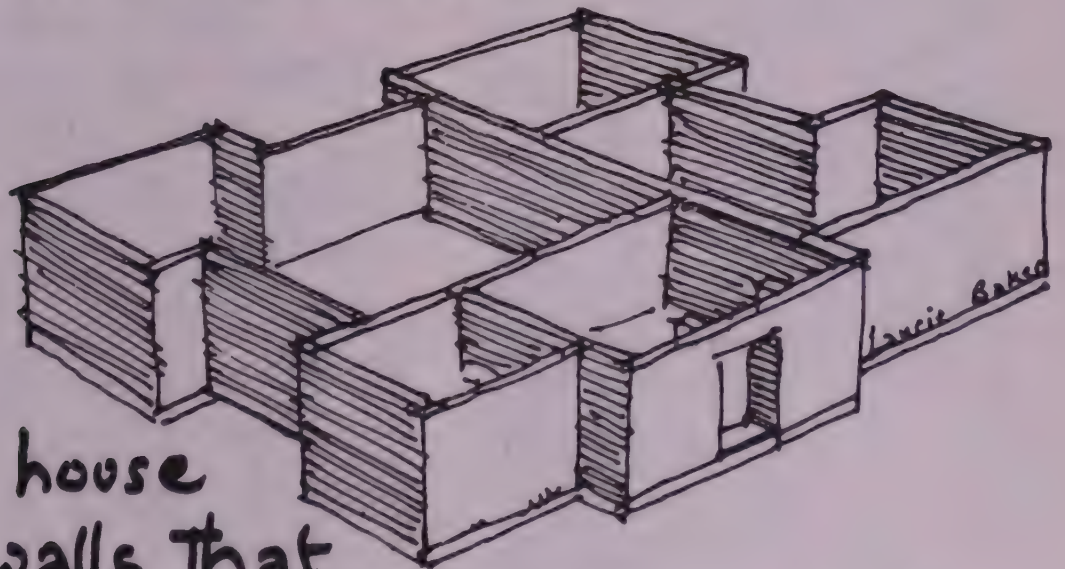
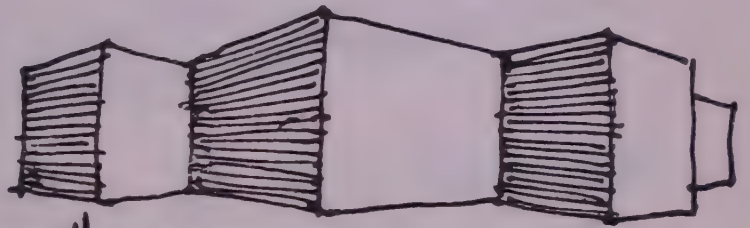
Lintels



You can build a $4\frac{1}{2}$ " brick wall.
If the wall is too long and too high - it will fall over



but if the lengths of wall are shorter, they will support and strengthen adjoining walls and not fall over.



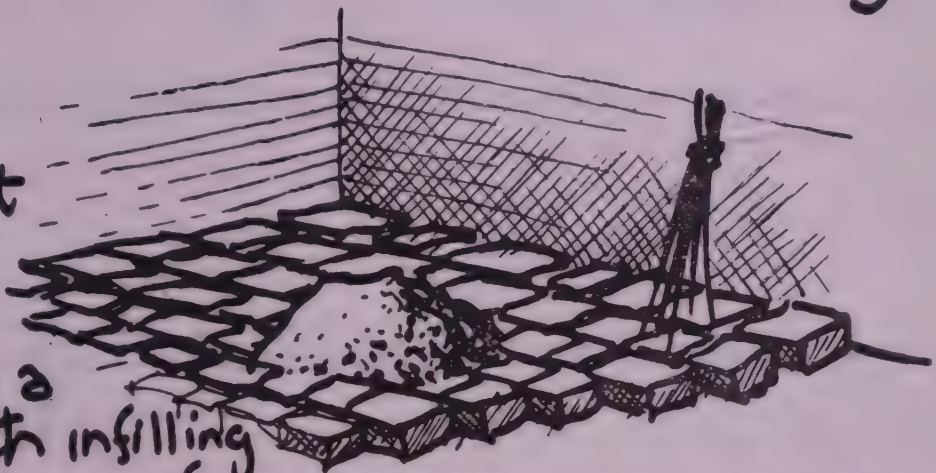
So a house with walls that go in and out like this will be strong, will not fall over, and can carry the weight of a roof

BRICK BATS

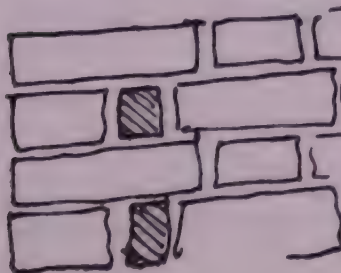
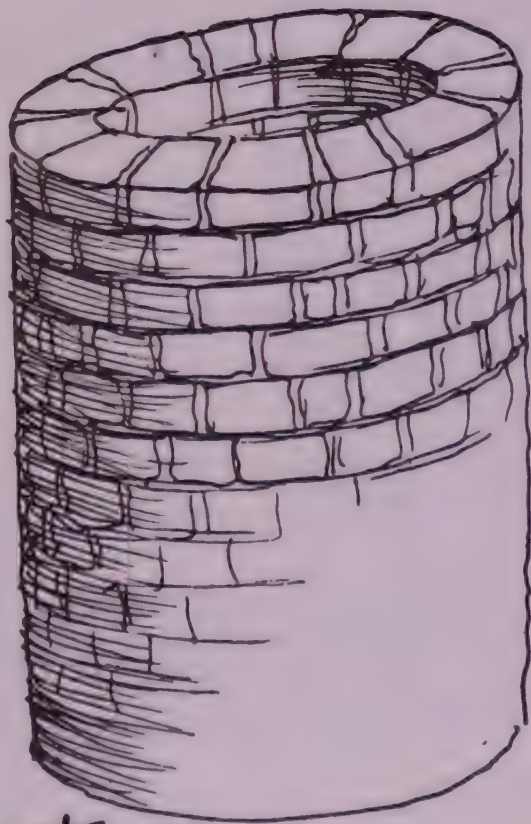
Use them for under-flooring

Lay them dry without mortar in rows tight together on a rammed earth infilling

Then mix a heap of lime mortar and brush it all over the floor. This gives a good base for all types of flooring



They are very useful for all sorts of curved or round walls such as for gate posts, spiral staircases etc. If a string of vertical joints is avoided such walls are very strong



and of course you always need them for orthodox bonding

M O R T A R S

A **CEMENT** and sand
1 part of Cement : 8 parts of sand.
THIS SETS QUICKLY
Use cement only if nothing else is available

B **LIME** and sand.
1 part of Lime : 3 parts of sand.
THIS SETS SLOWLY but is strong.
This can be used for all types of brick work.

C **LIME·CEMENT** and sand.
1 part Cement : 4 parts lime : 14 parts sand.
THIS SETS NEARLY AS QUICKLY AS CEMENT.
Use this if you need the mortar to set more quickly than lime

D **LIME·SURKI** and sand
1 part Lime : 2 parts Surki : 6 parts sand
THIS SETS MORE QUICKLY THAN LIME
This is slightly stronger than pure lime and sets more quickly

E **LIME·SURKI·CEMENT** and sand
1 part Cement : 2 parts Lime : 4 parts Surki : 20 sand
THIS SETS ALMOST AS QUICKLY AS CEMENT.
This gets good results more quickly than all except cement.

F **MUD** and water
Use the same mud, sifted, as used for mud blocks with enough water to make it plastic & usable.
This can be used for all 9" walls if protected.

ALWAYS MIX THE DRY INGREDIENTS TOGETHER BEFORE ADDING THE WATER

Mix the ingredients until no patches or streaks of white or grey are visible. Then add the water.

THE AUTHOR



Laurie Baker was born in England in 1917 and after studying at the Birmingham School of Architecture became an Associate of the Royal Institute of British Architects.

His practice was interrupted by World War II and he became an anaesthetist to a mobile surgical team! Later he became entirely involved in the treatment and control of Leprosy in West China. Trying to return to the U. K. in 1944 he had to wait for a boat for three months in Bombay at a time when Gandhiji was there. He was greatly influenced by him to return to live and work in India after a very brief spell at his home in England. In 1948 he married Elizabeth Jacob, a like-minded doctor from Kerala and until the mid-nineteen sixties they lived and worked in a remote Himalayan region where they built their own home, hospital and schools and brought up their children. It was during this period that Laurie Baker acquired his insight into the problems and actual conditions of rural India, together with his deep appreciation of indigenous architecture. After the death of his father in England, Laurie's Mother, at the age of 84, also came out to India to share her life with the family in the Himalayas, and she remained with them until her death ten years later.

Meanwhile, with the advent of "Development" into that Himalayan area, the Bakers decided to move South to Kerala and again they chose a remote mountain area among the neglected tribals and settlers to build another home and hospital. Baker acquired more knowledge of south Indian rural life and his architectural work showed this change. By 1970 they handed over their medical work to friends and settled in Trivandrum, continuing unto this day their mixture of medical, leprosy, architectural and building work. Laurie Baker has been closely associated with allied Government and quasi-government work including work with the Planning Commission and as a member of the Governing Bodies of H U D C O and the National Institute of Design, the Scientific Advisory Council of C. B. R. I. etc. He also extended his work into the industrial field and was for many years architectural consultant to a large Industrial firm. At the same time, and with these industrialists his work on alternative energy systems relating to building grew.

Still spurning offices and arm chair architecture Laurie Baker in his seventy second year is mostly to be found working on his building sites or training workers in their own remote territories to use twentieth century techniques while maintaining principles acquired over centuries to cope with Indian's own climate, materials, terrain and culture, not to mention increasing economic and population problems.

COSTFORD

COSTFORD stands for Centre of Science and Technology for Rural Development. It is a registered non-profit making voluntary organisation of scientists, technologists, educationalists, professionals, social workers etc. Its council consists of eminent men of science and technology, often also representing well known institutions who advice and encourage. *The founder Chairman of COSTFORD was Kerala's former Chief Minister (Late) C. Achutha Menon*

The objectives of COSTFORD are mainly aimed at tackling the problems of the poor and especially of the rural poor. However, so many people have been impressed by the simple, do-it-yourself, commonsense approach that quite a number of middle class people and government organisations and departments also seek and get COSTFORD's help.

COSTFORD tries to generate employment especially by using traditional materials and ideas in a contemporary and scientific manner.

COSTFORD tries to reduce costs so that these scientific approaches to common materials, techniques and needs come within the reach of the poorest people but are equally acceptable to all.

COSTFORD tries to teach people themselves how to improve their living and working conditions. Training programmes are not in class rooms and laboratories, (indeed COSTFORD owns no buildings or vehicles of its own) but on the spot, in the field (literally), in the villages, making and constructing while teaching and learning.

COSTFORD tries to involve professionals and technicians in its training programmes so that they can see for themselves at first hand what are the priorities and actual needs of the rural people, of the poor, and, indeed of all ordinary people.

COSTFORD tries to interact with other bodies struggling with similar problems. It is particularly interested in breaking through some of the Red Tape and bottlenecks in so much "Development" work.

COSTFORD tries to collect and disseminate useful data which can help improve our ordinary living conditions. COSTFORD is slowly putting out booklets which will try to spread simple, commonsense, do it yourself ways of doing, making and using natural resources for our needs.

COSTFORD is also producing items under its training production schemes. These items are mostly the result of research followed through to application and examination by usage, but which are not available in the market.

In these first few years of existence, COSTFORD has so far concentrated on rural sanitation, renewable sources of energy, rural and urban housing using only cost reducing techniques, and water management at the micro level.

A very large part of the practical work, the research, the collecting and compiling of data, and the teaching and training is done by a quiet, competent, enthusiastic group of qualified young architects, engineers, social workers and mechanics.

COSTFORD philosophy could be described as a collection of concerned people with a will to DO, to LEARN and to SHARE.

COSTFORD books aim at helping ordinary people to understand ordinary things. Make use of them if you can. If you can't, pass them on to others.



A Costford Publication

Price Rs. 10-00

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